

Title (en)
ENHANCED PHOTODETECTOR

Title (de)
VERBESSERTE FOTODETEKTOR

Title (fr)
PHOTODETECTEUR AMELIORE

Publication
EP 1470574 A4 20110216 (EN)

Application
EP 03708942 A 20030203

Priority
• US 0303181 W 20030203
• US 35384902 P 20020201

Abstract (en)
[origin: WO03065416A2] The present invention includes a photodiode having a first p-type semiconductor layer and an n-type semiconductor layer coupled by a second p-type semiconductor layer. The second p-type semiconductor layer has graded doping along the path of the carriers. In particular, the doping is concentration graded from a high value near the anode to a lower p concentration towards the cathode. By grading the doping in this way, an increase in absorption is achieved, improving the responsivity of the device. Although this doping increases the capacitance relative to an intrinsic semiconductor of the same thickness, the pseudo electric field that is created by the graded doping gives the electrons a very high velocity which more than compensates for this increased capacitance.

IPC 8 full level
H01L 21/00 (2006.01); **H01L 31/10** (2006.01); **H01L 29/732** (2006.01); **H01L 31/00** (2006.01); **H01L 31/0304** (2006.01); **H01L 31/0328** (2006.01); **H01L 31/075** (2012.01); **H01L 31/101** (2006.01); **H01L 31/103** (2006.01); **H01L 31/105** (2006.01); **H01L 31/109** (2006.01)

IPC 8 main group level
H01L (2006.01)

CPC (source: EP KR US)
H01L 31/03042 (2013.01 - EP US); **H01L 31/075** (2013.01 - KR); **H01L 31/10** (2013.01 - KR); **H01L 31/102** (2013.01 - EP US); **H01L 31/103** (2013.01 - KR); **H01L 31/105** (2013.01 - EP US); **Y02E 10/544** (2013.01 - US); **Y02E 10/548** (2013.01 - EP)

Citation (search report)
• [XA] US 5576559 A 19961119 - DAVIS GARY A [US]
• [IA] US 4068252 A 19780110 - LEBAILLY JACQUES
• See references of WO 03065416A2

Designated contracting state (EPC)
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LU MC NL PT SE SI SK TR

DOCDB simple family (publication)
WO 03065416 A2 20030807; **WO 03065416 A3 20040311**; AU 2003212899 A1 20030902; CA 2474556 A1 20030807; CA 2474556 C 20141007; CN 100474634 C 20090401; CN 1701445 A 20051123; EP 1470574 A2 20041027; EP 1470574 A4 20110216; EP 1470574 B1 20161130; EP 1470574 B9 20170412; ES 2616248 T3 20170612; HK 1085841 A1 20060901; JP 2005516413 A 20050602; JP 5021888 B2 20120912; KR 100766174 B1 20071010; KR 20040097991 A 20041118; US 2005056861 A1 20050317; US 7078741 B2 20060718

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